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Chronic CAD/Stable Ischemic Heart Disease

COMPARED EFFECTS OF SILDENAFIL AND G-CSF ON TISSUE PERFUSION AFTER LIMB ISCHAEMIA IN APOE KNOCKED-OUT MICE

ACC Moderated Poster Contributions
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Background: Sildenafil (PDE-5) induces angiogenesis via cGMP pathway. Granulocyte colony stimulating factor (G-CSF) stimulates granulocyte, stem cell production and vascular endothelial growth factor (VEGF). We examined whether sildenafil and G-CSF improve neovascularization following ischemia in mice.

Methods: 45 ApoE -/- male mice, 10 weeks old, bred with cholesterol rich diet for 6 weeks, underwent surgically induced unilateral hind-limb ischemia with ligation and excision of the left femoral artery. Mice were divided in three groups and received sildenafil (1mg/Kg for 7 days in 0,4ml solution, ip), G-CSF (300μg /Kg for 7 days in 0,4ml solution, ip) and normal saline (0,4ml for 7days, ip). Mice were closely monitored for 28 days postoperative and underwent laser Doppler perfusion imaging of after surgery on days 1, 7 and 28 for the estimation of the bilateral hind-limb perfusion.

Results: Treatment with G-CSF was associated with significantly increased perfusion in the ischaemic limb ($p<0.01$) while sildenafil induced a borderline non-significant improvement in the same limb (Figure). Both agents significantly accelerated perfusion ($p<0.01$) in the non-ischaemic limb, which was however lost at 28 days (Figure).

Conclusion: Both sildenafil and G-CSF accelerated tissue blood flow perfusion of the non-ischemic limb, an effect which was lost at 28 days. A similar effect of G-CSF was also observed in the ischaemic limb, suggesting an acceleration of neoangiogenesis and perfusion by these agents.